global leaflet

News from International Programs of the USDA Forest Service

No. 2, February 2003: Reduced–Impact Logging

Amazonia: Changing the Face of Logging

by Johan C. Zweede

Rubber, quinine, Brazil nuts—many common products originated in the Amazon basin. Yet we have tapped only a tiny fraction of Amazonia's potential. Whether for food, for pharmaceuticals, or for "ecological services" such as carbon sequestration, the Amazon rainforest is an invaluable resource for future generations worldwide.

That future potential is threatened. Thousands of square miles of rainforest are lost each year due to deforestation.

For developing Amazonia countries with surging populations, forest preservation throughout Amazonia's vast interior is not a viable option. But forest conservation might be another matter. Can the countries that share Amazonia's resources both use the rainforest for timber and conserve its wealth for future generations?

In 1994, the Tropical Forest Foundation—supported by the U.S. Department of Agriculture (USDA) Forest Service, the U.S. Agency for International Development, and others—set out to find the answer in cooperation with its Brazilian subsidiary, the Fundaçao Floresta Tropical. Working with local landowners, the Fundaçao Floresta Tropical established study plots for comparing conventional logging to sustainable forest management through reduced-impact logging. Conditions vary widely across Amazonia, so the Fundaçao Floresta Tropical used the same reduced-impact logging approach to develop different models on different sites.

Results are striking. Through careful planning, training, and technology application, reduced-impact logging can diminish the amount of ground disturbed and the damage done to remaining trees by up to 50 percent and the volume of residues left behind by logging by two-thirds. Reduced-impact logging also creates more local jobs than conventional logging, helping to stabilize local communities. Moreover, reduced-impact logging is cost-effective: At one study site, cost per cubic meter of wood produced was 12 percent less using reduced-impact logging than using conventional logging.

Training is key. The Fundaçao Floresta Tropical provides onsite training for foresters and forestry instructors at all levels—from tree identifiers to landowners. Technology transfer, extension, research, and publication programs round out the Fundaçao Floresta Tropical's activities.

Building on its success, the Fundaçao Floresta Tropical is transforming itself into a permanent forest management and training center based on partnerships among the Brazilian government, industry, and nongovernmental organizations.

Today, by changing the face of logging in Amazonia, the people of Brazil can use the rainforest while still preserving its myriad benefits for future generations.

Johan Zweede is the director of Fundaçao Floresta Tropical, the Brazilian subsidiary of the Tropical Forest Foundation, in Belém, Pará, Brazil.

KESTER EVANS

Reduced-impact logging in Amazonia: better for the environment and better for business.

WHAT'S INSIDE?

Reduced-Impact Logging

Reduced-Impact Logging: Sustaining Tropical Forests and Biodiversity

by Gary Hartshorn and Robert Petterson

In less than a decade, reduced-impact logging has evolved from an environmental dream into a legitimate component of numerous sustainable tropical forestry initiatives. This issue of *Global Leaflet* highlights key factors in this remarkable change, discussing the economic and ecological importance of reduced-impact logging.

Conventional logging of tropical forests for premium timber usually extracts a few valuable logs (such as mahogany) per acre, ignoring sustainable forestry practices. The pioneering studies of IMAZON, a Brazilian nongovernmental organization, documented the incredible inefficiency and damages associated with conventional logging.

By contrast, reduced-impact logging confers both ecological and economic benefits. The USDA Forest Service funded a major analysis of reduced-impact logging in the Brazilian state of Pará. Carried out by the Tropical Forest Foundation, the study documented the win-win merits of reduced-impact logging: From an economic standpoint, reduced-impact logging decreases the costs of logging by lessening skidding time and improving felling and yarding efficiencies; from an ecological standpoint, reduced-impact logging diminishes damage to the forest through directional felling and minimal skidding.

Thanks to its economic and ecological benefits, reduced-impact logging has quickly become key to national and international efforts to certify production forestry operations in natural tropical forests. For example, the Code of Practice for Forest Harvesting in Asia-Pacific, published in 1999 by the Asia-Pacific Forestry Commission, is helping to build regional support for reduced-impact logging in this region.

Commercial forestry operations are enthusiastic about incorporating reduced-impact logging into their harvesting practices. However, the scarcity of trained employees prevents reduced-impact logging from being more rapidly adopted. Through its Brazilian subsidiary, the Tropical Forest Foundation has developed a successful training program for reduced-impact logging in the Brazilian Amazon.

In forest-rich tropical countries, sustainable forestry has enormous potential for conserving biodiversity. Protected areas, such as national parks and reserves, generally cover less than 10 percent of the national territory, leaving extensive areas of tropical forests open to development. If unprotected forests are not managed on a sustainable basis for timber and other forest products, they are doomed to conversion.

The past decade has seen remarkable changes in tropical forestry as timber companies try to improve their bottom line. The rapid integration of reduced-impact logging and certification into tropical timber operations by many companies is especially heartening. We look forward to an exciting future of tropical forestry operations that produce valuable wood, sustain tropical forests, provide environmental services, and protect biodiversity.

Gary Hartshorn, President and Chief Executive Officer of the Organization for Tropical Studies, serves as Chairman of the Board of Directors for the Tropical Forest Foundation, and Robert Petterson, formerly Vice President of the Latin America Division of Caterpillar, Inc., serves as President of the Tropical Forest Foundation.

What Is the Tropical Forest Foundation?

The Tropical Forest Foundation is a nonprofit organization dedicated to promoting sustainable tropical forest management. Its members represent a wide range of industry, development, research, and environmental organizations.

For more information on the Tropical Forest Foundation, please visit **http://www.tropicalforestfoundation.org.**

KEISTER EVANS

KEISTER EVANS

A study in contrasts: Tree canopy views illustrate the impacts of conventional logging (left) and reduced-impact logging (right)

Reduced-Impact Logging: What's the Bottom Line?

by Dennis P. Dykstra

It all comes down to the bottom line. Often, the only way to protect forest resources in cash-strapped developing countries is to find ways of using them that are both sustainable and profitable. Reduced-impact logging seems to fit the bill.

Reduced-impact logging not only does less environmental damage than conventional logging, but can also be more efficient and cost-effective, according to some studies. Tom Holmes, a USDA Forest Service economist, working with the Tropical Forest Foundation and its Brazilian subsidiary, Fundaçao Floresta Tropical, compared costs and revenues from a typical reduced-impact logging system to a typical large-scale conventional logging system in the eastern part of the Amazon basin in the Brazilian state of Pará.

His findings are remarkable. Under reduced-impact logging, training investments produced more efficient use of machinery and timber. The overall cost per cubic meter of wood produced was 12 percent less for reduced-impact logging than for conventional logging.

However, study results do not necessarily apply to other timbersheds in the Amazon basin, let alone elsewhere. Moreover, reduced-impact logging incurs costs that conventional logging does not, such as preharvest mapping, planning, and vine cutting. Some studies have found that the costs can outweigh the savings from using reduced-impact logging.

Businesses are naturally risk averse, and many loggers are loathe to adopt techniques that might reduce their profits. Moreover, preconceived notions that reduced-impact logging is less profitable might prevent its adoption by companies that would otherwise benefit.

The trick is to let individual loggers actually see in advance how reduced-impact logging would affect their bottom lines. In 2001, a team of international cooperators began developing software to do just that. The primary sponsor is the USDA Forest Service, with support from the Center for International Forestry Research; the University of Florida; and Blue Ox Forestry, an international forestry consulting practice based in Portland, OR.

The software, Reduced-Impact Logging Simulator (RILSIM), was "beta-tested" in May 2002, with distribution planned for late 2002. Available at no cost if downloaded over the Internet and for a modest fee on CD-ROM, it can operate on computers with little memory and limited disk capacity. It is easy to install and use. Users simply complete a series of "data forms" based on local site conditions, wages, equipment costs, and other factors. The analysis then shows the profitability of using reduced-impact logging.

In many tropical forests, conventional logging depletes timber stocks and inflicts severe ecological damage, costs that future generations must bear. Reduced-impact logging can be part of the solution, but only if private producers see its profitability. Now, the USDA Forest Service and its partners are harnessing the power of information technology to show the potential payoffs.

Dennis Dykstra, formerly Director of Research for the Center for International Forestry Research, is an international forestry consultant for Blue Ox Forestry, Portland, OR.

What Is Reduced-Impact Logging?

Loggers in the Tropics typically remove only the most valuable trees, such as mahogany. Other trees are often killed or damaged in the process. Reduced-impact logging is designed to minimize the disturbances associated with selective timber harvest. It is not a fixed prescription; it adapts the best possible harvest techniques to local site and market conditions.

Reduced-impact logging typically includes extensive preharvest planning. Trees are inventoried and mapped for efficient, cost-effective harvest. Roads, skid trails, and log landings are planned to minimize the number needed. Vines are cut to protect adjacent trees. Trees are felled in the direction least likely to damage adjacent trees and other forest resources. Stumps are cut low to the ground to utilize every inch of wood. Construction techniques for roads, skid trails, and landings are designed to minimize soil disturbance. Heavy machinery is kept to skid trails, so logs are winched. Slash is reduced to prevent fire hazards from developing.

Benefits are palpable. Reduced-impact logging systems typically produce less damage to residual forests, fewer roads and skid trails, less erosion, better water quality, fewer fire hazards, and faster forest regeneration.

The Asia-Pacific region can boast of rich native forests—with unique forest management challenges.

FANG ZHENDONG

Asia-Pacific: A Visionary Approach to Sustainable Forestry

by Patrick B. Durst and Thomas Enters

Forestry faces a dilemma: Consumer demand for forest products is rising, yet so is social demand for less destruction from timber harvest. Many people see a solution to the dilemma in reduced-impact logging.

From a purely technical standpoint, reduced-impact logging is all about harvesting with fewer soil disturbances and less incidental damage to remaining trees. But reduced-impact logging involves much more than merely learning new techniques or practices. It calls for changes in attitudes and behavior, and—perhaps most importantly—a sincere commitment to sustainable forest management, translated into actual changes on the ground.

Changing behavior and generating commitment require a visionary, long-term, step-by-step approach. The Asia-Pacific Forestry Commission, one of six regional forestry commissions in the United Nations Food and Agriculture Organization, is taking that approach. Since the mid-1990s, the commission has sought to bring diverse stakeholders together in the forestry sector to work toward improved forest management.

In 1999, the commission published its *Code of Practice for Forest Harvesting in Asia-Pacific*. The code has helped guide harvesting practices while providing a model for national codes in several countries. It has won increasing political support, including endorsement by the Association of Southeast Asian Nations Ministers for Agriculture and Forestry and Senior Officials on Forestry.

The Asia-Pacific Forestry Commission also helps countries implement national codes. It supported the development of a regional training strategy and disseminates information about reduced-impact logging, including information on the contentious economic and institutional implications of reduced-impact logging. With support from the USDA Forest Service, the commission maintains an electronic list server called RIL-NET. The server provides members worldwide with a forum to discuss and share information on reduced-impact logging.

In early 2001, the Asia-Pacific Forestry Commission organized the International Conference on the Application of Reduced-Impact Logging, held in Kuching, Malaysia. Cosponsors included the USDA Forest Service, International Tropical Timber Organization, Center for International Forestry Research, and other organizations. The conference attracted more than 250 participants from 35 countries. Proceedings are scheduled for publication in September 2002.

The conference made several important recommendations for promoting and implementing reduced-impact logging. The enthusiasm and commitment of participants justify cautious optimism that behavior and attitudes are slowly changing. However, considerable challenges lie ahead. Governments, industry, research institutions, and international organizations must intensify their support for reduced-impact logging. Without its widespread adoption and vigorous implementation, the future of the region's valuable native forests remains uncertain.

GARY MAN

In Vanuatu, members of the Asia-Pacific Forestry Commission discuss the progress of Pacific Island countries in adopting reduced-impact logging practices from a political and technical standpoint.

Patrick Durst and Thomas Enters are, respectively, the senior forestry officer and forestry sector analysis specialist for the Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific, Bangkok, Thailand.

MELISSA OTHMAN

Forest Service engineer Rick Toupin assesses selective felling practices in the Congo.

Congo Basin: Making Forestry Sustainable

by Melissa Othman

Until recently, the Congo's forests were relatively unknown to science. While we know that the Congo has the second largest intact tropical rainforest in the world and that many people depend on its spectacular biodiversity for their survival, there is so much we don't know.

However, our understanding of this complex ecosystem is changing, in part through the Central African Regional Program for the Environment (CARPE), a program supported by the USDA Forest Service and funded by the U.S. Agency for International Development. The Congo is under siege, and CARPE is furthering our understanding of how this situation affects the natural resource base. Many lands in the Congo have been deforested and converted to agricultural uses. Remaining forests are threatened by conventional logging, particularly by logging roads and poor logging camp placement.

More and more logging roads are snaking into Africa's tropical forests, bringing thousands of workers and a cash economy to remote areas, partly through wildlife poaching. Increased access to remote areas has fueled the trade in wildlife, also known as bushmeat. The bushmeat trade depletes wildlife populations and threatens ecosystem health. Today, commercial hunters deliver a million pounds of bushmeat per year from the Congo basin alone.

The ecological price is steep. Overharvest not only could drive species into extinction, but also disrupts complex interdependencies among plants and animals, endangering entire forest ecosystems. Elephants, for example, play a vital role in propagating several types of fruit-bearing trees. If elephants decline, so will these trees.

The bushmeat issue has opened a debate on conventional logging practices in central Africa. For the developing countries of the Congo basin, timber and game reserves are vital resources. Present and future generations will depend on their use and conservation through harvest practices that are sustainable.

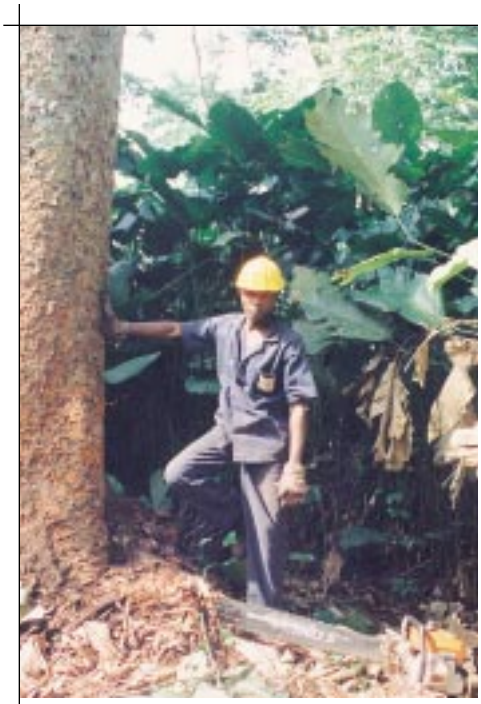
Through CARPE, the USDA Forest Service promotes programs to improve forest management practices in the Congo, as do many other organizations in the region. As part of this improvement, Richard Toupin, a logging engineer in the Forest Service's Pacific Northwest Region, participated in a 2-week assessment of several logging companies operating in the Congo basin.

Part of the solution lies in reduced-impact logging. Only recently introduced to Africa, reduced-impact logging programs plan for minimal, sensibly placed roads, skid trails, and landings. These programs also introduce sound felling and bucking techniques. Felling practices and techniques present the greatest opportunity for reducing logging impacts, as do skidding practices. Sound planning in road and skid trail layout can greatly minimize access to forest areas.

Moreover, reduced-impact logging decreases impacts from road and landing construction and standardizes practices across companies, making operations more efficient. In the Congo, the planning process for forest management should include wildlife monitoring and hunting control, reducing the threat to native wildlife.

Reduced-impact logging has payoffs for all players. Through its use, private companies can make profitable short- and long-term forestry investments. Reduced-impact logging represents one more tool for governments to protect the long-term health and productivity of the land. Citizens can use forest resources while leaving a strong forest heritage for their children. Finally, conservation groups—and government agencies such as the USDA Forest Service—can help protect the Congo's native ecosystems and rich biodiversity far into the future.

Melissa Othman is the Africa Program coordinator, USDA Forest Service, International Programs, Washington, DC.



MELISSA OTHMAN

Congolese loggers are learning about the benefits of reduced-impact logging—including better road planning, which reduces unwanted access to the Congo's vast tropical rainforest.

News Bits From Around The World

Forestry Cooperation Between the People's Republic of China and the United States

In some ways, China is much closer to the United States than some people might think. In terms of climate, physiography, biology, and even natural resource policies, China and the United States are strikingly similar. Both countries have much to gain from capitalizing on our commonalities.

Recognizing this, the USDA Forest Service and the Chinese State Forestry Administration have signed an agreement to cooperate on forestry. On June 12, 2002, Associate Chief Sally Collins and her Chinese counterpart, Vice Administrator Li Yucai, opened the first session of the United States–People's Republic of China Joint Working Group on Forestry Cooperation in Beijing, China.

In her opening remarks, Collins observed that our countries face similar environmental and policy challenges in managing our forests. Both the USDA Forest Service and the Chinese State Forestry Administration, she noted, are charged with providing the values and services that our respective peoples expect from their forests. The best chance we have to meet the challenge is to take an ecosystem approach to forest management. Success will require global cooperation, especially between countries with similar biological and physical features.

In the meeting, both sides agreed to collaborate over the next 2 years on 15 activities in such areas as forest policy and economic analysis, invasive species, fire monitoring, forest inventory and monitoring, forest health and restoration, and nature-based tourism.

After the meeting, Collins and her USDA Forest Service delegation visited a forest in China, giving them a firsthand view of the progress China has made in forest management. The delegation also learned more about the challenges China faces, in part due to the diversity of its forests and people.

ITTO Explores Reduced-Impact Logging

As in other forestry organizations, reduced-impact logging has recently become a prominent topic in the International Tropical Timber Organization (ITTO). In fact, ITTO helped support the International Conference on the Application of Reduced-Impact Logging to Advance Sustainable Forest Management, held in Kuching, Malaysia, in February 2001. The conference produced recommendations for promoting reduced-impact logging.

In Central Africa, ITTO cosponsored a 1-day workshop in May 2001 in collaboration with the World Conservation Union and the USDA Forest Service. The workshop focused on developing a logging code of practice for the region, identifying regional training needs, and assessing the costs and benefits of reduced-impact logging.

In Brazil, ITTO cofunded a program by the Fundaçao Floresta Tropical, in coordination with the Brazilian Federal Institute of the Environment and Natural Resources, to "train the trainers" in reduced-impact logging.

In Indonesia, ITTO supports the Bulungan Research Forest project, a collaborative effort between a state-owned logging company and the Center for International Forestry Research to develop logging guidelines, train staff in reduced-impact logging, and compare the costs and benefits of reduced-impact logging and conventional logging. ITTO is also establishing a training center for reduced-impact logging in each of the three tropical regions (Africa, Asia-Pacific, and the Americas).

GARY MAN

Renewing a commitment: Forest Service Associate Chief Sally Collins and her counterpart, Vice Administrator Li Yucai of the Chinese State Forestry Administration, build a partnership on invasive species, forest policy, and nature-based tourism.

Workshop on Illegal Logging

On May 29–31, 2002, a workshop explored field techniques for combating illegal logging and improving transparency in the forestry sector worldwide. Cohosts included the World Resources Institute; USDA Forest Service, International Programs; and U.S. Agency for International Development.




Illegal logging has adverse environmental and social impacts, undermining the ability of legitimate timber producers to compete. The workshop brought together representatives from government and nongovernmental organizations that are working to detect, expose, and shut down illegal logging.

Participants shared experiences, learned new techniques, and discussed ways to focus more international attention on illegal logging. The workshop laid the foundation for future cooperation and mutual support across borders and forest types around the globe.

United States Prepares for XXII World Forestry Congress

Every 6 years, thousands gather at forestry's most important global event—the World Forestry Congress. On September 21–28, 2003, Canada will host the XXII World Forestry Congress in Quebec City, giving forestry practitioners and policymakers the opportunity to exchange information on forest resources and discuss forest management issues.

The theme for next year's Congress is "Forests, Source of Life"—a look at how forests benefit the Earth and its inhabitants worldwide. Program areas include "Forests for People," "Forests for the Planet," and "People and Forests in Harmony."

An Internet discussion forum will highlight the upcoming congress. Organizers and individual countries are putting together a program of plenary, research, and technical presentations; exhibits; technical tours; and various side events. Congress organizers can be reached at sec-gen@wfc2003.org (e-mail); additional details can be found on the World Wide Web at http://www.wfc2003.org.

The USDA Forest Service, International Programs, is planning U.S. participation in the Congress by working with stakeholder groups to coordinate activities, exhibits, speakers, and study tours. Denise Ingram, the International Programs point of contact, can be reached at cdingram@fs.fed.us (e-mail), 202-273-4733 (voice), or 202-273-4750 (fax).

Visit these Web sites for more information related to articles in this issue:

http://www.tropicalforestfoundation.org - Tropical Forest Foundation

http://www.ots.duke.edu - Organization for Tropical Studies

http://www.imazon.org.br - Institute for Man and the Environment in the Amazon

http://www.apfcweb.org - Asia-Pacific Forestry Commission

http://carpe.umd.edu - Central African Regional Program for the Environment

http://www.aseansec.org - Association of Southeast Asian Nations

http://www.itto.or.jp - International Tropical Timber Organization

http://www.cifor.cgiar.org - Center for International Forestry Research

http://www.blueoxinc.com - Blue Ox Forestry

http://www.ibama.gov.br - Brazilian Federal Institute of the Environment and Natural Resources

http://www.iucn.org - IUCN-World Conservation Union

http://www.wri.org - World Resources Institute

http://www.wfc2003.org - World Forestry Congress

19th International Seminar on Forest and Natural Resources Administration and Management

Dates: August 24-September 11, 2003
Arizona, Colorado, North Carolina, and the District of Columbia, USA
Cost: US $5,600.00

Jointly offered by Colorado State University and USDA Forest Service International Programs, this seminar is designed for senior natural resource management professionals. The 19-day program focuses on strategies and methods to develop, manage, and conserve natural resources for the sustained delivery of goods and services to meet the full range of human needs. For more information and application details, visit **http://www.fs.fed.us/global/is/isfam/welcome.htm** or write to Ann Keith, College of Natural Resources, Colorado State University, Fort Collins, CO 80523-1401, USA, or e-mail at **ifs@cnr.colostate.edu.**

2003 International Seminar on Protected Area Management

Dates: August 7-23, 2003
Missoula, Montana, USA
Cost: US $4,750.00

This seminar — jointly offered by Colorado State University, University of Montana, University of Idaho, and USDA Forest Service International Programs — is geared for senior-level managers and policymakers working in protected areas. The program examines and stimulates debate on management strategies, policies, and innovative institutional arrangements to address the conservation and use of the world's most special places. For more information and application details, visit **http://www.fs.fed.us/global/is/ispam/welcome.htm** or write to Dr. Wayne Freimund, School of Forestry, The University of Montana, Missoula, MT 59812, USA, or e-mail at **wayne@forestry.umt.edu.**

2003 International Seminar on Watershed Management

Dates: June 15-28, 2003
Stevens Point, Wisconsin, USA
Cost: US $4,000.00

Jointly offered by the University of Wisconsin-Stevens Point and the USDA Forest Service International Programs, this seminar is geared towards senior-level natural resource professionals. The course examines the needs and challenges facing watershed managers and focuses on strategies and methods to manage and conserve watershed resources sustainably. For more information and application details, visit **http://www.fs.fed.us/global/is/watershed/welcome.htm** or write to Dr. Earl Spangenberg, University of Wisconsin-Stevens Point, College of Natural Resources, Stevens Point, WI 54481-3897 USA or e-mail at **espangen@uwsp.edu.**

Secretary of Agriculture **Ann M. Veneman**
Chief of the Forest Service **Dale N. Bosworth**

International Programs
USDA Forest Service
1099 14th St. NW, Suite 5500W
Washington, DC 20005-3402

Web site **http://www.fs.fed.us/global**

Director **Val Mezainis**
Phone **(202) 205-1650**

Art Director **George Avalos**
Editor **Hutch Brown**

USDA
United States Department of Agriculture

Forest Service

International Programs

The **Global Leaflet** presents highlights of policy, research, technical cooperation, development, and conservation activities in which the USDA Forest Service is involved worldwide. Its purpose is to demonstrate the breadth and importance of international collaboration on natural resource management issues and to share information within the USDA Forest Service and with our partners in the United States and around the world.

International Programs is dedicated to applying the wealth of skills within the USDA Forest Service to foster sustainable forest management globally. We encourage linking the agency's researchers, foresters, wildlife biologists, hydrologists, policymakers, and disaster specialists with partners overseas to work on assignments in the areas of technical cooperation, policy assistance, and disaster coordination. Our focus is on key natural resource problems and issues in countries with significant forest resources and important forest-related trade with the United States. International cooperation results in improved sustainable natural resource practices in partner countries, develops the skills of USDA Forest Service personnel, and brings back knowledge and innovated technologies to the United States.